WHAT IS CLAIMED:

1. A component with a platinum-aluminum substrate surface region comprising:

a component substrate, composed of one or more constituents, having a substrate surface; and

a substrate surface region, formed at the substrate surface by diffusion of platinum and aluminum into the substrate surface, the substrate surface region comprising platinum, aluminum, and at least one constituent of the substrate composition,

wherein at least one of the integrated aluminum content and the integrated platinum content in the substrate surface region is less than 18 wt%.

2. A component with a platinum-aluminum substrate surface region comprising:

a component substrate, composed of one or more constituents, having a substrate surface; and

a substrate surface region, formed at the substrate surface, the substrate surface region comprising platinum, aluminum, and at least one constituent of the substrate composition,

wherein at least one of the integrated aluminum content and the integrated platinum content in the substrate surface region is less than 18 wt%.

3. A component as claimed in Claim 2, wherein the component is a gas turbine component.

4. A component as claimed in Claim 2, wherein the integrated aluminum content in the substrate surface region is between 10 wt% and 17.99 wt%, and the integrated platinum content in the substrate surface region is between 5 wt% and 40 wt%.

5. A component as claimed in Claim 2, wherein the integrated platinum content in the substrate surface region is between 5 wt% and 17.99 wt% and the integrated aluminum content in the substrate surface region is between 10 wt% and 24 wt%.

6. A component as claimed in Claim 2, wherein the integrated aluminum content in the substrate surface region is between 10 wt% and 17.99 wt% and the integrated platinum content in the substrate surface region is between 5 wt% and 17.99 wt%.

7. A component as claimed in Claim 2, wherein the substrate surface region comprises a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a substrate surface region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and both the platinum content and the aluminum content remain below the values of 5 wt% and 8 wt%, respectively, beyond said substrate surface region depth,

and wherein, starting at the substrate surface or at the point directly beneath the substrate surface, at least an upper half of the substrate surface region is more than 50% in the form of a β-NiAl structure.

8. A component as claimed in Claim 2, wherein the component is a gas turbine component, and wherein the constituents of the substrate composition comprise a nickel alloy or a titanium alloy.

9. The component of claim 8, wherein the component is an aircraft engine gas turbine component.

10. The component of claim 8, wherein the component is a blade of a gas turbine.

11. A platinum aluminum coating for a component having a substrate composed of one or more constituents, the coating comprising a substrate surface region composed of platinum, aluminum, and at least one constituent of the substrate composition, wherein at least one of the integrated aluminum content and the integrated platinum content in the surface layer is less than 18 wt%.

12. A coating as claimed in Claim 11, wherein the coating is formed by diffusion of platinum and aluminum into a surface of the substrate.

13. A coating as claimed in Claim 11, wherein the integrated aluminum content in the substrate surface region is between 10 wt% and 17.99 wt% and the integrated platinum content in the substrate surface region is between 5 wt% and 40 wt%.

14. A coating as claimed in Claim 11, wherein the integrated platinum content in the substrate surface region is between 5 wt% and 17.99 wt% and the integrated aluminum content in the substrate surface region is between 10 wt% and 24 wt%.

15. A coating as claimed in Claim 11, wherein the integrated aluminum content in the substrate surface region is between 10 wt% and

17.99 wt% and the integrated platinum content in the substrate surface region is between 5 wt% and 17.99 wt%.

16. A method of preventing corrosion of a component comprising forming a coating as claimed in claim 11 on a component substrate.

17. A method of preventing hot-gas corrosion of a component comprising forming a coating as claimed in claim 11 on a component substrate.

18. A method of producing a component having a platinum-aluminum substrate surface region, comprising:

a) providing a component having a substrate with a substrate surface and a substrate composition composed of one or more constituents;

b) diffusing platinum into the substrate surface of the component; and

c) diffusing aluminum into the substrate surface of the component subsequent to said diffusion of platinum to form a component with a platinum-aluminum substrate surface region, wherein at least one of the integrated aluminum content and the integrated platinum content in the platinum-aluminum substrate surface region is less than 18 wt%.

19. A method as claimed in Claim 18, wherein the platinum-aluminum substrate surface region has an integrated aluminum content between 10 wt% and 17.99 wt%, an integrated platinum content between 5 wt% and 40 wt%, with a remainder of the substrate surface region comprising at least one constituent of the substrate composition.

20. A method as claimed in Claim 18, wherein the platinum-aluminum substrate surface region has an integrated aluminum content between 10 wt% and 24 wt%, an integrated platinum content between 5 wt%

and 17.99 wt% with the remainder comprising at least one constituent of the substrate composition.

21. A method as claimed in Claim 18, wherein the platinum-aluminum substrate surface region has an integrated aluminum content between 10 wt% and 17.99 wt%, an integrated platinum content between 5 wt% and 17.99 wt% with the remainder comprising at least one constituent of the substrate composition.

22. A method as claimed in Claim 18, wherein a gas turbine component is provided as the component.

23. A method as claimed in Claim 22, wherein the gas turbine component is a blade of an aircraft engine.

24. A method as claimed in Claim 22, wherein a component having a substrate composition based on a nickel alloy or a titanium alloy is provided.

25. A component having a platinum-aluminum substrate surface region, comprising:

a component substrate having a substrate composition composed of one or more constituents; and

a substrate surface region formed at a surface of the component substrate by diffusion of platinum and aluminum into the substrate surface, the substrate surface region comprising platinum, aluminum, and one or more constituents of the substrate composition,

wherein at least one of the platinum content and the aluminum content is essentially constant in a zone of the substrate surface region

starting from the substrate surface or a point directly beneath the substrate surface to a predetermined depth of the substrate surface region.

26. A component as claimed in Claim 25, wherein the component is a gas turbine component.

27. A component as claimed in Claim 25, wherein the platinum content in said zone of the substrate surface region varies by a maximum of ±10%.

28. A component as claimed in Claim 27, wherein the platinum content in said zone of the substrate surface region varies by a maximum of ±7.5%.

29. A component as claimed in Claim 27, wherein the platinum content in said zone of the substrate surface region varies by a maximum of ±5%.

30. A component as claimed in Claim 25, wherein the platinum content is essentially constant in said zone and said zone comprises at least 20% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and the platinum content and the aluminum content remain below 5 wt% and 8 wt%, respectively, beyond the region depth.

31. A component as claimed in Claim 25, wherein the platinum content is essentially constant in said zone and said zone comprises at least 30% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and the platinum content and the aluminum content remain below 5 wt% and 8 wt%, respectively, beyond the region depth.

32. A component as claimed in Claim 31, wherein said zone comprises at least 40% of said bounded region.

33. A component as claimed in Claim 25, wherein the point directly beneath the substrate surface is at a depth of approximately 5 μm beneath the substrate surface.

34. A component as claimed in Claim 25, wherein the aluminum content is less than 18 wt% throughout the substrate surface region.

35. A component as claimed in Claim 25, wherein the aluminum content in said zone of the substrate surface region varies by a maximum of ±10%.

36. A component as claimed in Claim 35, wherein the aluminum content in said zone of the substrate surface region varies by a maximum of ±7.5%.

37. A component as claimed in Claim 35, wherein the aluminum content in said zone of the substrate surface region varies by a maximum of ±5%.

38. A component as claimed in Claim 25, wherein the aluminum content is essentially constant in said zone and said zone comprises at least 20% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and the platinum content and the aluminum content remain below 5 wt% and 8 wt%, respectively, beyond the region depth.

39. A component as claimed in Claim 25, wherein the aluminum content is essentially constant in said zone and said zone comprises at least

30% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and the platinum content and the aluminum content remain below 5 wt% and 8 wt%, respectively, beyond the region depth.

40. A component as claimed in Claim 39, wherein said zone comprises at least 40% of said bounded region.

41. A component as claimed in Claim 25, wherein the substrate surface region comprises a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a substrate surface region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and both the platinum content and the aluminum content remain below the values of 5 wt% and 8 wt%, respectively, beyond the substrate surface region depth,

and wherein, starting at the substrate surface or at the point directly beneath the substrate surface, at least an upper half of the substrate surface region is more than 50% in the form of a β-NiAl structure.

42. A platinum-aluminum coating for a component having a substrate, wherein the substrate is composed of one or more constituents and the coating is formed by diffusing platinum and aluminum into a surface of the substrate to form a substrate surface region containing platinum, aluminum, and at least one constituent of the substrate composition, and wherein at least one of the aluminum content and the platinum content remain essentially constant in a zone of the substrate surface region starting from the substrate surface or a point directly below the substrate surface to a predetermined depth.

43. A platinum-aluminum coating as claimed in Claim 42, wherein the component is a gas turbine component.

44. A platinum-aluminum coating as claimed in Claim 42, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±10%.

45. A platinum-aluminum coating as claimed in Claim 42, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±7.5%.

46. A platinum-aluminum coating as claimed in Claim 42, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±5%.

47. A platinum-aluminum coating as claimed in Claim 42, wherein said zone of the substrate surface region comprises at least 20% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and the platinum content and the aluminum content remain below 5 wt% and 8 wt%, respectively, beyond the region depth.

48. A platinum-aluminum coating as claimed in Claim 47, wherein said zone comprises at least 30% of said bounded region.

49. A platinum-aluminum coating as claimed in Claim 42, wherein the substrate surface region comprises a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a substrate surface region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and both the platinum content and the aluminum content remain below the

values of 5 wt% and 8 wt%, respectively, beyond the substrate surface region depth,

and wherein, starting at the substrate surface or at the point directly beneath the substrate surface, at least an upper half of the substrate surface region is more than 50% in the form of a β-NiAl structure.

50. A method of preventing corrosion of a component comprising forming a coating as claimed in claim 42 on a component substrate.

51. A method of preventing hot-gas corrosion of a component comprising forming a coating as claimed in claim 42 on a component substrate.

52. A method of producing a component having a platinum-aluminum substrate surface region, comprising:

a) providing a component having a substrate with a substrate surface and a substrate composition composed of one or more constituents,

b) diffusing platinum into the substrate surface,

c) diffusing aluminum into the substrate surface subsequent to said diffusion of platinum so that at least one of the aluminum content and the platinum content is essentially constant in a zone of the substrate surface region starting from the substrate surface or a point directly beneath the substrate surface to a predetermined depth in the substrate surface region.

53. A method according to Claim 52, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±10%.

54. A method according to Claim 52, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±7.5%.

55. A method according to Claim 52, wherein at least one of the platinum content and the aluminum content in said zone of the substrate surface region varies by a maximum of ±5%.

56. A method as claimed in Claim 52, wherein said diffusion of aluminum into the substrate surface is performed so that said zone of the substrate surface region comprises at least 20% of a region bounded on one side by the substrate surface or a point directly beneath the substrate surface, and bounded on the other side by a region depth at which the platinum content is 5 wt% or less, the aluminum content is 8 wt% or less, and both the platinum content and the aluminum content remain below the values of 5 wt% and 8 wt%, respectively, beyond the region depth.

57. The method of Claim 56, wherein said zone comprises at least 30% of the bounded region.

58. The method of Claim 56, wherein said zone comprises at least 40% of the bounded region.

59. A method as claimed in Claim 52, wherein coating granules with a low activity are used for said diffusion of platinum and subsequent diffusion of aluminum, and wherein the activity of the coating granules near the substrate surface that is to be coated is kept essentially constant over the entire coating time.